Notebook, N-88-06-01.1

This notebook contains dated entries from June 1888. All entries are by Edison. At the beginning of the book is a 49-page list of minerals wanted for a specimen cabinet. On the following pages are notes and drawings relating to phonograph experiments, resins for recording cylinders, batteries (including those for the phonograph), and ore milling. Some of the notes on the phonograph contain references to Edison's recent patent applications. At the end of the book are several pages of miscellaneous drawings. The pages are unnumbered. Approximately 90 pages have been used.

XE172 N-88-06-01.1

Nice specimen is wanted of each kind for Cabinet, but of small size –

Considerable quantities are wanted for experimental purposes –

Please give ~~of~~ prices for the Cabinet Specimen & price per lb for the common varieties in quantities and probable quantity in ore – I have dropped the formulas as unnecessary – This List is from Dana – I am particularly desirous of obtaining ~~mineral~~ fossil Resins – Lignites Bitumens etc – In many cases I shall want 50 lbs of a mineral =

T A Edison

Mark the 2 prices opposite name of mineral

Orpiment.

Dimorphite

Stibnite

Bismuthnite

Tetradymite

Joseite

Wehrlite

Molybdenite

Price a Per cent in ore

Dyscrasite	Ag^2Sb
Chilenite	Ag^6Bi
Domeykite	Cu_3As_2
Algodonite	Cu_6As_2
Whitneyite	$Cu_9 - As_2$
Argentite	$Ag S$
Naumannite	$Ag Pb - Se$
Eucairite	$(Cu Ag) Se$
Crooksite	$(Cu Tl) Se$
Galenite	$Pb.S.$
Huascolite	$Pb.Zn.S$
Clausthalite	$PbSe$
Zorgite	$(Pb Cu) Se$
Lehrbachite	$(Pb Hg) Se.$

Altaite $Pb.Te$
Bornite $(Cu\,Fe)\,S$
Berzelianite $CuSe$.
Castillite $CuZn\,R{-}S\,Fe\,S_2$
Alabandite $Mn\,S$
Syepoorite $Co\,S$
Pentlandite. $(Ni.Fe)\,S$
Grunauite

Sphalerite. $Zn\,S$
Marmatite $(ZnFe)\,S$
Przibramite. $(ZnCd)\,S$
Valtzite $ZnS-ZnO$.

Hessite $AgTe$
Dalemenzite $Ag\,S$.
Acanthite $Ag\,S$.

Chalcocite	$Cu.S.$
Stromeyerite	$(Cu\,Ag)\,S$
Sternbergite	$(Fe\,Ag)\,S + Fe\,S^2$
Cinnabar	$Hg.S.$
Tiemannite	$Hg\,Se$?
Millerite	$Ni\,S$
Troilite	$Fe\,S$
Pyrrhotite.	$Fe\,S - Fe\,S^2$
Greenockite	$Cd\,S$
Wurtzite	$Zn\,S$
Niccolite	$Ni.\,As.$
Breithauptite.	$Ni.\,Sb$
Kaneite.	$Mn\,As$
Schreibersite	$Fe\,Ni\,P.$

Pyrite FeS^2
Hauerite MnS^2
Cubanite $FeCu.S.$
Chalcopyrite $(CuFe)S.FeS^2$
Barnhardite $(CuFe)'S\,FeS^2\,CuS$
Stannite $CuFeZn-S\;SnS^2$
Linnaeite $CoS\;CoS^2$
Carrollite $(CuCo)S,CoS^2$
Smaltite $(CoFeNi)As2$
Skutterudite $CoAs^2$
Cobaltite $Co(S.As)^2$
Gersdorffite $N'(S\,Sb\,As)^2$
Corynite - $Ni-(SAs\,Sb-)^2$
Laurite - RuS^2 Os

X,

Marcasite	FeS^2
Leucopyrite	$FeAs^2$
Rammelsbergite	$NiAs^2$
Mohsite	$FeAs^2 + FeAs$ -
Arsenopyrite.	$Fe(SAs)^2$
Glaucodot	$(CoFe)(SAs)^2$
Pacite	$Fe \cdot S\,As$
Alloclasite	$Co\,S\,As\,Bi$
Nagyagite-	
Covellite,	CuS^2
Chalcostibite -	$CuS - SbS$
Emplectite	$CuS\,Bi\,S$
Chiviatite	$CuPb.\,S\,Bi\,S$
Berthiérite	FeS, Sb, S
Sartorite	$PbS\,As, S.$
Zinkenite	$PbS\,SbS.$

X

Jordanite
Miargyrite
Plagionite
Binnite
Brongniardite
Jamesonite
Dufrenoysite
Freieslebenite
Pyrostilpnite
Rittingerite
Pyrargyrite
Proustite
Bournonite
Stylotypite
Wittichenite
Boulangerite
Kobellite
Aikinite

X

Tetrahedrite
Polytelite
Tennantite
Meneghinite
Geocronite
Stephanite
Polybasite
Enargite.
Xanthoconite

X

Sylvite.
Halite.
Cerargyrite
Embolite.
Bromyrite.
Iodyrite
Coccinite
Cotunnite
Molysite.
Carnallite
Tachhydrite
Kremersite
Matlockite
Mendipite
Schwartzembergite
Atacamite
Tallingite
Percylite.

X

Fluorite
Yttrocerite
Fluocerite
Fluocerine.
Fluellite
Cryolite
Arksutite
Chiolite
Chodneffite
Pachnolite
Thomsenolite.
Gearksutite
Prosopite.

X,

Cuprite
Periclasite
Bunsenite
Zincite
Massicot
Melaconite
Corundum
Hematite
Menaccanite
Perofskite
Spinel
Hercynite
Gahnite
Magnetite
Magnesioferrite
Franklinite
Chromite

X

Uraninite
Chrysoberyl
Cassiterite
Rutile
Octahedrite
Hausmannite
Braunite
Minium
Brookite
Pyrolusite
Crednerite
Plattnerite
Turgite
Diaspore
Gothite
Manganite

X

Limonite
Xanthosiderite
Beauxite
Eliasite
Brucite
Pyrochroite.
Gibbsite
Limnite
Hydrotalcite.
Pyroaurite.
Psilomelane
Wad
Bog Manganese.
Asbolite.
Lampadite

X

Arsenolite.
Senarmontite
Valentinite
Bismite
Karelinite
Molybdite
Tungstite
Kermesite
Cervantite
Stibiconite
Volgerite
Quartz com
Enstatite
Hypersthene
Diaclasite
Wollastonite

Pyroxene-
Aegirite
Acmite
Rhodonite
Babingtonite
Spodumene
Petalite
Kupfferite
Anthophyllite
Amphibole
Arfedsonite
Crocidolite
Wichtisite
Glaucophane
Sordawalite
Tachylyte

Beryl
Eudialyte
Pollucite
Forsterite
Monticellite
Chrysolite
Fayalite
Tephroite
Knebelite
Leucophanite
Wohlerite
Willemite
Phenacite
Meliphanite
Helvite
Danalite

Garnet
Grossaularite
Pyrope
Almandite
Spessartite
Bredbergite
Ouvarovite
Zircon
Vesuvianite
Melilite
Sphenoclase
Epidote
Koelbingite
Piedmontite
Allanite
Muromontite
Bodenite
Michaelsonite

Zoisite
Saussurite
Jadeite
Partschinite
Gadolinite
Mosandrite
Ilvaite
Axinite
Danburite
Iolite
Phlogopite
Biotite
Lepidomelane
Annite
Astrophyllite
Muscovite
Lepidolite
Cryophyllite

Sarcolite
Meionite
Paranthite
Wernerite
Ekebergite
Mizzonite
Dipyre
Marialite
Nephelite
Sodalite
Lapis Lazuli
Hauynite
Nosite
Leucite
Anorthite
Laboradorite
Andesite
Hyalophane

Oligoclase
Albite
Orthoclase
Eulytite
Atelestite
Chondrodite
Tourmaline
Gehlenite
Andalusite
Fibrolite
Kyanite
Topaz
Euclase
Datolite
Guarinite
Titanite

Grothite
Keilhauite
Tscheffkinite
Staurolite
Schorlomite
Sapphirine
Pectolite
Xonaltite
Okenite
Gyrolite
Laumontite
Leonhardite
Catapleiite
Dioptase
Chrysocolla
Alipite
Conarite

Picrosmine
Spadaite
Neolite
Anthosiderite
Calamine
Villarsite
Prehnite
Chlorastrolite
Tritomite
Thorite
Cerite
Erdmannite
Pyrosmalite

Apophyllite
Edingtonite
Gismondite
Carpholite
Allophane
Collyrite
Schrötterite
Thomsonite
Natrolite
Scolecite
Ellagite
Mesolito
Levynite
Analcite
Eudnophite
Faujasite

Chabazite
Gmelinite
Herschelite
Phillipsite
Harmotome
Hypostilbite
Stilbite
Epistilbite
Heulandite
Brewsterite
Mordenite
~~Sal~~ Sloanite
Sacopachite
Talc
Pyrophyllite
Pihlite
Sepiolite

Aphrodite
Cimolite
Smectite
Montmorillonite
Stilpnomelane
Chloropal
Opal
Glauconite
Celadonite
Serpentine
Bastite
Deweylite
Cerolite
Hydrophite
Genthite
Saponite

Pholerite
Kaolinite
Halloysite
Samoite
Pinite
Cataspilite
Bharite
Palagonite
Fahlunite
Groppite
Voigtite
Margarodite
Damourite
Paragonite
Euphyllite
Œllacherite
Cookeite
Hisingerite

Ekmannite
Neotocite
Stubelite
Gillingite
Jollyte
Epechlorite
Polyhydrite
Pyrosclerite
Chonicrite
Jefferisite
Penninite
Ripidolite
Prochlorite
Cronstedtite
Chloritoid
Margarite

Thuringite
Seybertite
Wolchonskoite
Miloschite
Pimelite
Chlorophaëite
Klipsteinite
Chamóisite
Alvite

Pyrochlore
Microlite
Tantalite
Columbite
Tapiolite

Hielmite
Yttrotantalite
Samarskite
Euxenite
AEschynite
Polycrase
Polymignite
Fergusonite
Adelpholite
Mengite.
Rutherfordite
Xenotime
Cryptolite
Apatite
Pyromorphite
Mimetite

Wagnerite
Monazite
Turnerite
Triphylite
Triplite
Hopeite
Berzelite
Carminite
Amblygonite
Herderite
Monemolite
Romeite
Ammiolite
Stercorite
Struvite
Haidingerite

Brushite
Metabrushite
Pharmacolite
Churchite
Hoernesite
Roesslerite
Vivianite
Symplesite
Erythrite
Annabergite
Cabrerite
Kottigite
Hureaulite
Chondrarsenite
Trichalcite
Thrombolite
Libethenite
Olivenite

Adamite
Conichalcite
Bayldonite
Euchroite
Tagilite
Liroconite
Pseudomalachite
Ehlite
Dihydrite
Erinite
Cornwallite
Tyrolite
Clinoclasite
Chalcophyllite
Berlinite
Callainite
Lazulite

Barrandite
Scorodite
Wavellite
Trolleite.
Plumbogummite
Calcioferrite
Pharmacosiderite
Cirrolite
Childrenite
Attacolite
Augelite
Turquois
Peganite
Fischerite
Tavistockite
Dufrenite
Cacoxenite

Arseniosederite
Evansite
Torbernite
Autunite
Amphithalite
Sphaerite
Borickite
Diadochite
Pitticite
Beudantite
Lindackerite
Svanbergite
Ficinite
Bindheimite
Diadochite
Pittacite

~~Beudantite~~

~~Lindackerite~~

Sassolite

Szaebelyite

Hydroboracite

Boracite

Rhodizite

Bechilite

Howlite

Ulexite

Cryptomorphite

Larderellite

Lagonite

Wolframite
Hubnerite
Ferberite
Megabasite
Scheelite
Cuproscheelite.
Stolzite
Wulfenite
Pateraite
Dechenite
Descloizite
Vanadinite
Volborthite
Chileite

Aphthitalite
Misenite
Thenardite
Barite
Celestite
Anhydrite
Anglesite
Zinkosite
Leadhillite
Caledonite
Dreelite
Susannite
Connellite
Glauberite
Lanarkite
Crocoite

Phoenicochroite
Vauquelinite
Jossaite
Pettkoite
Alumian
Mascagnite
Boussingaultite
Lecontite
Mirabilite
Gypsum
Kieserite
Polyhalite
Mamanite
Picromerite
Bloedite
Loeweite

Epsomite
Tauriscite
Fauserite
Melanterite
Pisanite
~~Gf~~ Goslarite
Bieberite
Morenosite
Chalcanthite
Alunogen
Coquimbite
Tschermigite
Kalinite
Voltaite
Blakeite
Mendozite

Pickeringite
Apjohnite
Bosjemannite
Halotrichite
Roemerite
Copiapite
Raimondite
Fibroferrite
Apatelite
Botryogen
Aluminite
Alunite
Lowigite
Jarosite
Carphosiderite
Paraluminite
Pissophanite

Felsobanyite
Glockerite
Lamprophanite
Linarite
Brochantite
Cyanotrechite
Johannite
Uranochalcite
Medjidite
Zippeite
Voglianite
Uraconite
Montanite
Kerstenite

Calcite
Dolomite
Ankerite
Magnesite
Mesitite
Pistomesite
Siderite
Rhodochrosite
Smithsonite
Aragonite
Manganocalcite
Witherite
Bromlite
Strontianite
Cerussite

Barytocalcite
Parisite
Kischtimite
Phosgenite
Teschemacherite
Natron
Thermonatrite.
Trona
Gaylussite
Hydromagnesite
Hydrodolomite.
Predazzite
Pencatite
Hovite
Lanthanite
Tengerite

Zaratite

Remingtonite

Hydrozincite

Aurichalcite.

Malachite

Azurite

Bismutite

Liebigite

~~Vob~~

Voglite

Hydrocarbon Compounds

Scheererite.
Chrismatite
Urpethite.
Halchettite
Ozocerite.
Zietriskite
Elaterite
Settling Stones Resin.
Fichtelite
Hartite
Dinite
Ixolyte
Geocerite
Geomyricite

Copalite
Succinite
Walchowite
Bucaramangite
Ambrite
Bathvillite
Torbanite
Xyloretinite
Leucopetrite
Euosmite
Scleretinite
Jaulingite
Pyroretinite
Reussinite
Rochlederite
Schlanite

Guyaquillite
Middlestonite
Stanekite
Anthracoxenite
Tasmanite
Dysodile
Hircite
Baikerinite
Butyrellite
Geocerellite
Brucknerelite
Succinellite
Retinellite
Dopplerite
Melanellite
Mellite
Pigolite

All kinds of Bitumen-Asphalts,
Petrolene.
Asphaltene;
Brown Coal
Torbanite.
Earthy brown Coal
Mineral Charcoal.
Diferent Cannel Coals

X

June 1 1888

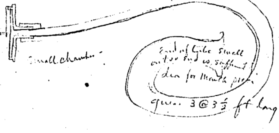
Ideas for articulation experiments on phonograph

Sheet pin'd to this June 1 1888

Instead Bolting Cloth use Thick silk = Ditto 006 glass - 003 if can get it - see if shellac films can be made that is 002 or 001 thick ~~that~~ would answer for a receiver -

Perhaps the Condensation wave is different from the rarefaction wave hence put some weights on end of record lever vary amounts & notice articulation

There is no doubt but a very small single long tube is the best - Have John Draw the lines ~~of~~ long one I think speaking ~~[illegible]~~ tube should be thus

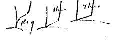

Small chamber
End of tube small outside end is sufficient dia for mouth piece

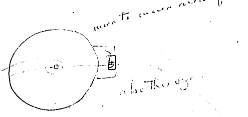
guess 3 @ 3½ ft long best.

June 1 1858 —

Possibly great deal noise is recorded by waves striking on recording side of diaphragm this could be obviated with 1/16 inch brass with hole through for knife — perhaps the ~~[illegible]~~ the tube should be connected to diaphragm through very fine hole .010 by wire & thus dampen the waves of great amplitude —

Perhaps the abnormal big amplitude fundamentals could be damped by the shape of the knife.





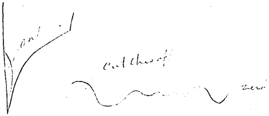
In new machine shorten rubber to $\frac{1}{16}$ & stiffen, stiff diminish size from 3/64 to $\frac{1}{32}$ on [illegible], use longer needle as this is more Elastic. Bohemian hard glass needle would be better as its 3 times lighter and far more elastic. Dont forget to try platina pointed Recorder also Osmium Iridium —

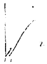
It seems to me that the internal chamber of the Receiver & tubes is wrong it should be just the opposite of the recorder

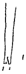
X

June 1 1888

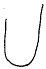
Sharpen recorder Knife & buff to flat edge
also sharpen to very fine edge and
rub over glass with Rouge on —
try phosphor Bronze Knife — Ditto
Spiegeleisen — Hard Speculum metal
ditto platinum Iridium to get a little
agate ditto Bohemian glass buffed —


cut
cut this off
zero line


2 needles long


1 longer than the two needles 2 grooves

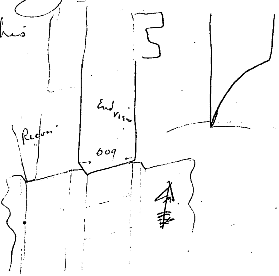
June 1/88



This is probably the best
form cutting point as it
brings out weak vibs & diminishes
scratching but its hard to manufacture

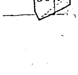
June 1/88

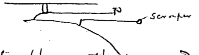
Try this


End view
Region
.009

This makes the sensitive vibs very deep & enormously dampens the fundamentals - use nearly all of space

Maybe the angle should be





Better than this would be an Aluminum Bronze or brass Knife with sharp but buffed edge without razor edge teeth or Saphire or Iridosmine so as to insure a perfectly smooth cut without furrows to collect wax dust by action of receiver —

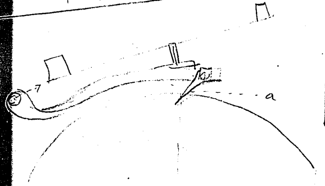
Claim in patent new phono —

1 Double Recorder for Copies —
2 " Talking tube
3rd False shell —
4 Double (ie) 2 or more shells on one cylinder for newspaper work
5th Belt driving
6 pivoted pulley guides —
7 Oil cup covered in top motor shaft —
8 Belt tightener —
9 Simultaneous raising spectacle & traveller arm Spec 1st
10 Final raising of traveller on setting Spec way back —
11 - wax guard
12 Eccentric straight edge screw. index etc —
13 Removable section of traveller thread nut —
14 False boring prevent cylinder coming off —
15 patent of agate centers
16 Indexd governor — pulley driven —
17 ~~Silver contact, revolvable~~
18 4 or more pole Motor — details —
19 - Diaphm & Knife in line with center of arm —
20 - Screw with head at bottom on receiver —
21 - Center wax guard over center —

22 - End nut for stopping or reversing.
23 - Magnet contact for governor
24 - Buffed Recorder & Reproducer.
25 - angle of Transmitter - Shaving Knife angle -
26 - Glass recvr - Recorder bet Rubber -
27 Mailing box, ring - also other -
28 Double Recording -
29 - Ext in Shellac on silk dia.
30. Round buffed recvr point -

31 - flexible paper cylinders -
32 - Ceresine & Gum Dammar = or Beeswax only See Payne -

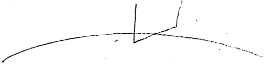
Ivory cutting point.



Perhaps this is the true angle of Recorder as amplitude will then depend on speed of Wax up to certain point & dampen [illegible] the fundamentals a side hitting way of Cylinder too Slow — Besides it will make a clean cut & its Easy & not make diaphragm fry!

June 1 88

This same thing can be done but theoretically not so well by as the chips come off hard & will break in wax if too deeply tracked while you can track to great depth other way

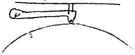


In new patent show how fine Record point can be used and cylinder used 3 times before turning by shifting position of Recorder. | not more wax to be turned off.

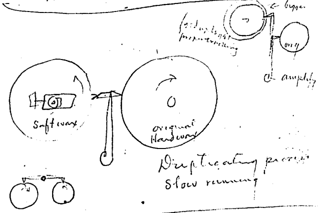
New patent - Multiplying Cylinders
1st Vac 2nd plbgo. 3rd Bronze powder
4- Silver salt & reducing agent.
5 - between Electrodes revolving.
7 - Several funnels several phonographs
8 Hydraulic pressure - 5
9 Talking Ele directly on the EP [illegible]
Case harden.
10 from very hard wax cylinder itself a soft oleic residue or oleate.
11. Harden Record by Hydraulic as with Billiard balls Celluloid

Try a wheel recorder June 1 88
TAE

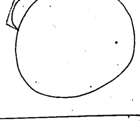
watch jewells -



Little Cotton in chamber of glass trans to dampen [illegible]


bigger
faster bigger preserve
orig
amplify
Soft wax
original Hardwax

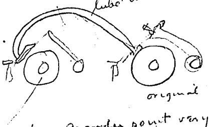
Duplicating process
Slow running



double recording to get even damping of diaphragm

June 1 88

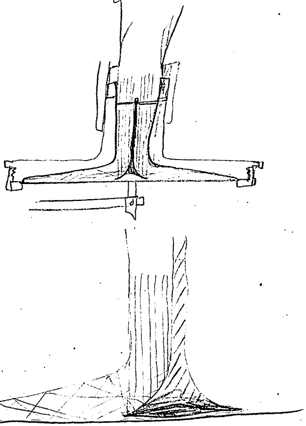
Multiplying -



Very fine Recorder point very sensitive diaphm - - Original has widest possible point, Large diaphragm for recording & Receiver connected with good Recording & Reproducing & widest Receiving point so as not to knock down vibration, Then try Lowering pitch so as to get better record

perhaps a very slight deposit of nickel over surface might allow of duplication of many thousands by process on other page & this -

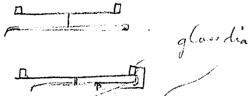
June 1 88 7 05



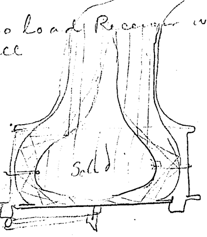
good

June 1 88

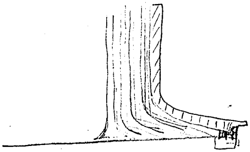
Imitate human Ear on diaphram Reproducer Translate Vibration great amplitude into one small amp great power



also load Receiver with a ball

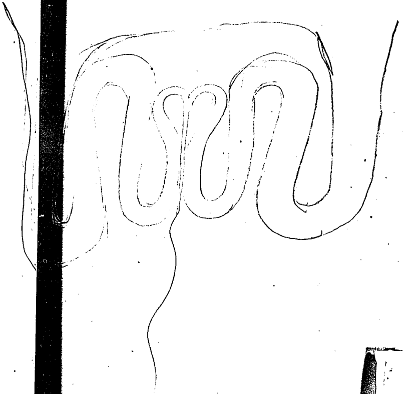


June 1/88



Game 1-1558

Condensed funnel



15

312
50
15600

15

3

312
120
3240
312
37440

100000

120
200
24000

200000

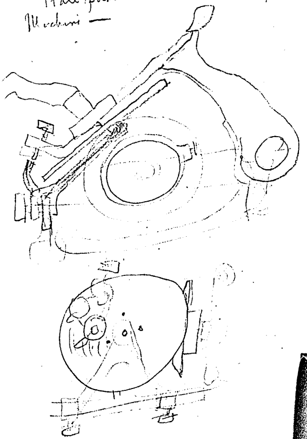
312
240
1248
624
74880

June 2 1888

For buffing tool for phonograph point mix Rouge with guttapercha or Collodian or glue - make pieces

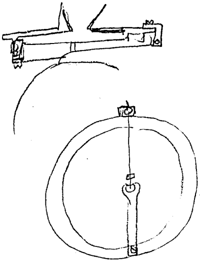
---

Plate phono attachment to Regular Mechanism —



June 3rd 1888

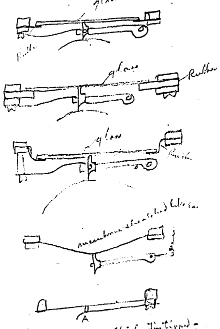
guidepoint for receiver.



June 3rd – 1888

Ideas copied from mem May 20/88

~~Articulation~~ Expts


glass
Rubber
glass
Rubber
glass
Rubber
membrane stretched like ear
A

mem
steel 004 @
006 dia

Double grooved

Record use to Receiver points

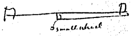
or

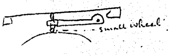
1/32 apart 2 Recv needle one track doesn't run into other

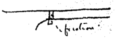
A. Bone – Steel, Tin tipped –
Quartz tipped, Saphire tipped
Raw hide, Rhinoceros horn
Hog Bristle – Silkworm gut
Bamboo – bone, glass [illegible]
Aluminum Bronze – ground [illegible]
Rubber [illegible] reed carbon
Felt Recvr diaphr – do Cork, do Heavy silk
shellacked for [illegible]
Spcl Spectacle use longer dia for [illegible]
Reg way – Specially for music

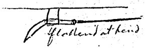
June 3 1888

art expts Cont'd.

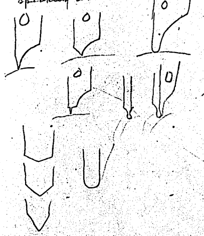

small wheel


small wheel



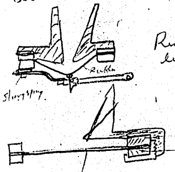

flattened at head

paper—(Rubber, Hard) Cork. diaphs
make adjustable opening bottom
speaking tube, — Try Every form
Specially long slight angle taper
speaking tubes



June 3rd 1888

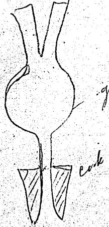
Articulation Expts –


Rubber
Sliding spring
Thick rubber
Very thick glass

Rubber stretched near limit of elasticity.

All these Expts with thin & thick rubber rings & glass.

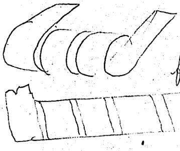
Try Hyatts dodge of heating silk cloth between plates & pressure to make Receiving diaphragm –



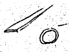
glass tubes in Receiver to give mouth chamber imitation. try various sizes.

June 3rd 88 —

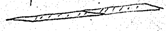
Insert in Speaking tube or transmitter
side hole adjustable to try expand to
also open fine gauze cloth stop air
rushes not vibrations



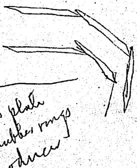
flat band Spiral
for talker tube



narrow thin band of metal for
Listening tube

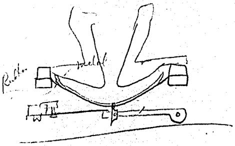


also Lap principle



Taper in opposite
direction for
talk & listening

Try .006 glass plate
between 1/32 Rubber rings
for Reproducer



List of diaphramme materials for Transmitters + Reproducers
Sheet Shellac
Hard Rubber
Sheet Sulphur
Phosphide of Iron
Melted Sheet. Orpement
Melted Asphaltene poured in sheet, Carbonized paper - Jamadine, Asphaltene, Parchment 1/2.
Porcelain
Hardest toughest stiffest glass .004 instead .006.
Ivory
Horn
Can Iceland Spar be got in Sheets
Hardened steel
Plated sheet nickel, Steel Iron formed by plating entirely

June 16 1888 TAE

All the Resins poured in sheets
after melting = do gums

In Watts Dic under Mercury
or amalgams — The Copper
Hg Amalgam used by Paris
Dentists is plastic when
powdered & kneeded but harden
& can again be made plastic
by powdering & kneeding
Try phono Cylinder of felt
or wax paper etc Coated,

For Battery for phono

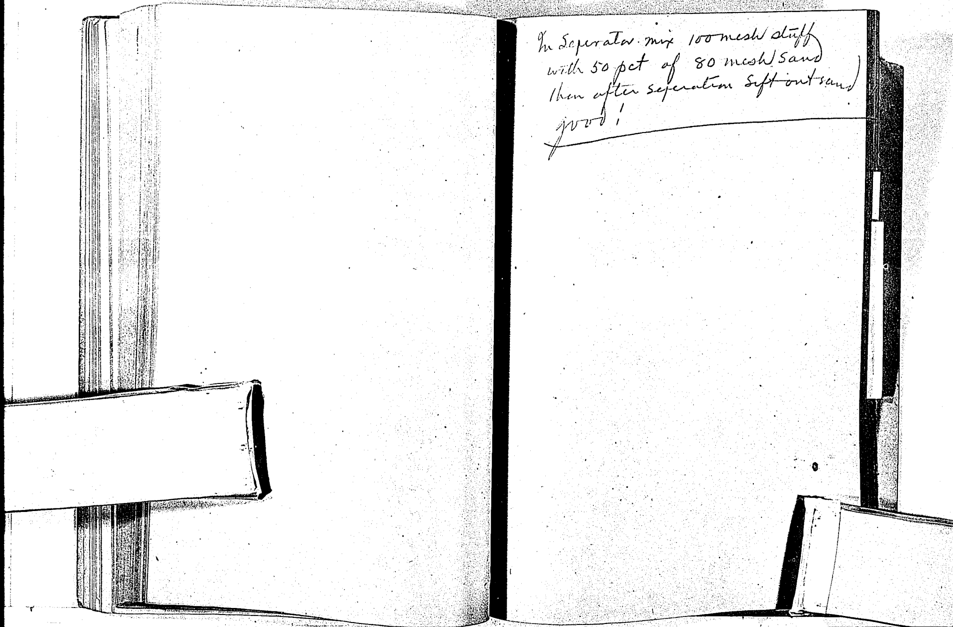
Try Copper troughs one filled
with Hydride Copper & the
with Oxide Copper =
or if this dont work see
if Hydride is a Conductor
if so put in porous cell
& use Copper pole.

also on Grenet Cell use a Zinc filled with holes with mercury, or Sulphate Hg — to Keep it highly amalgamated

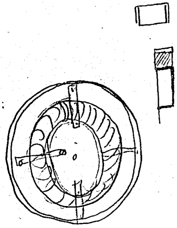
Make 2 Watson Cells with low internal — To get at proportions try Multiple arcing Reg Watson —

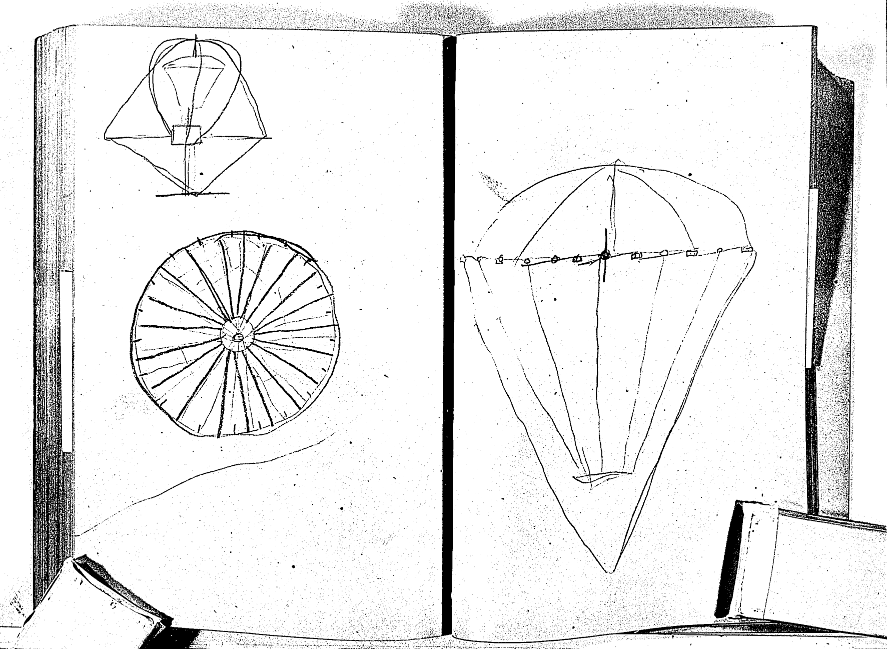
Make a Storage Battery with Hydride (solid) Arsenic as P pole & Carbon with depolar or Oxide Cu etc as neg —

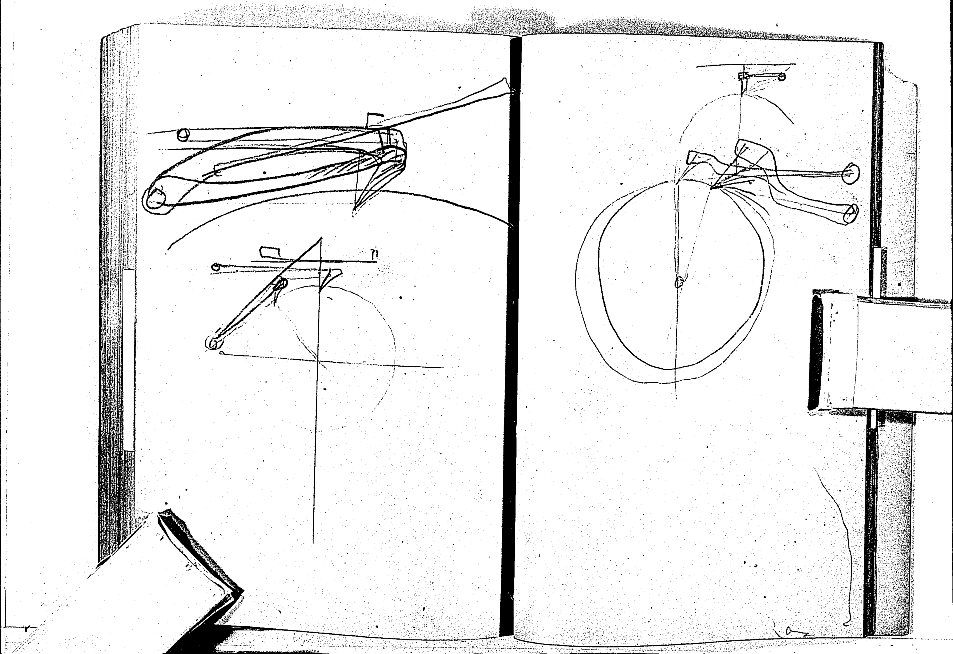
Ore Milling. Crush 150 mesh — Roast & Crush 250 mesh & sift out with finest cloth or float, or after roasting pass down through Red Hot CO or H to reduce to Metallic Fe —

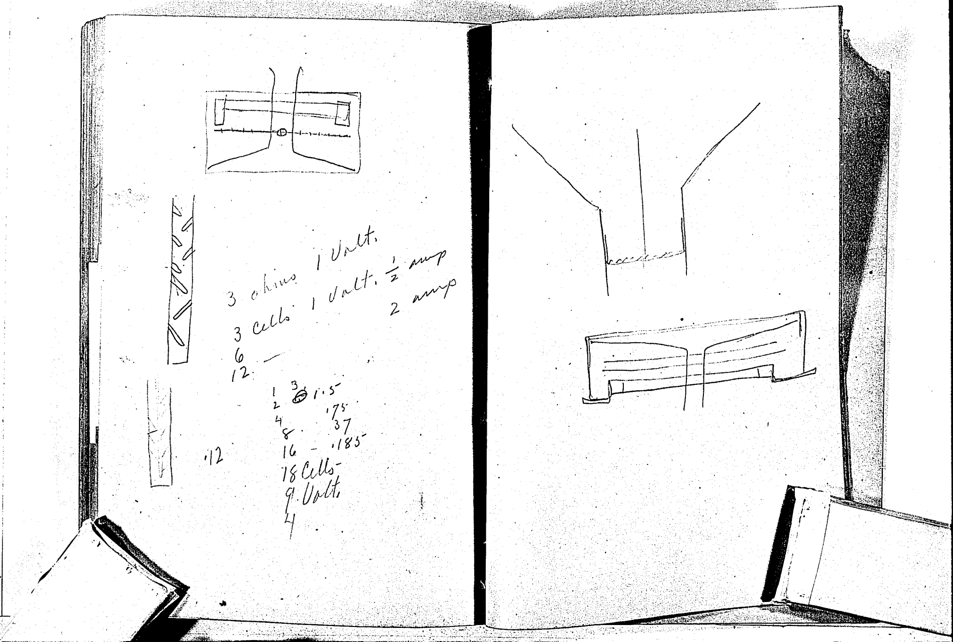


In Seperator mix 100 mesh stuff
with 50 pct of 80 mesh sand
then after seperation sift out sand
good!





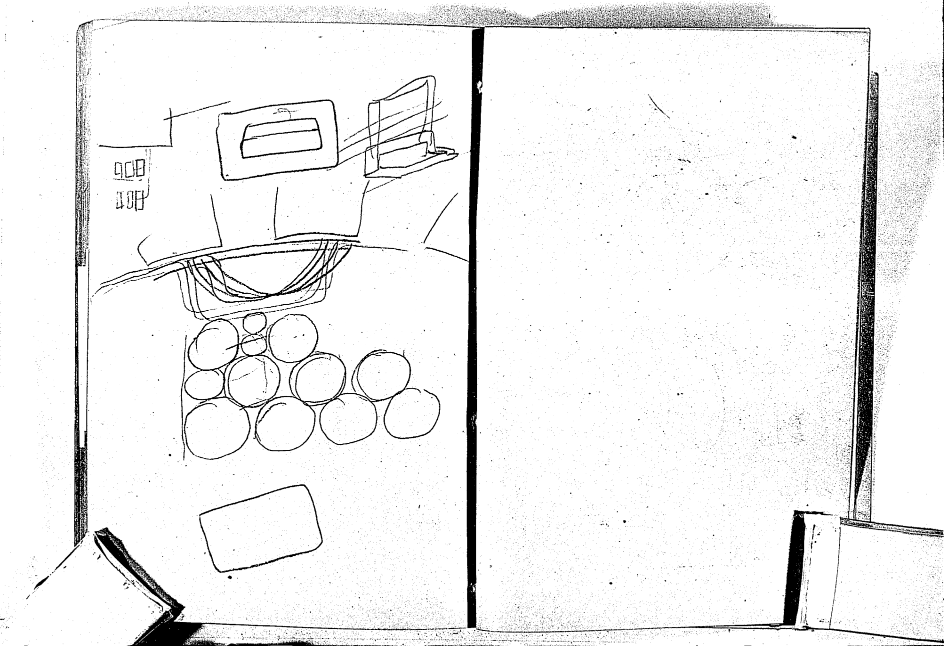


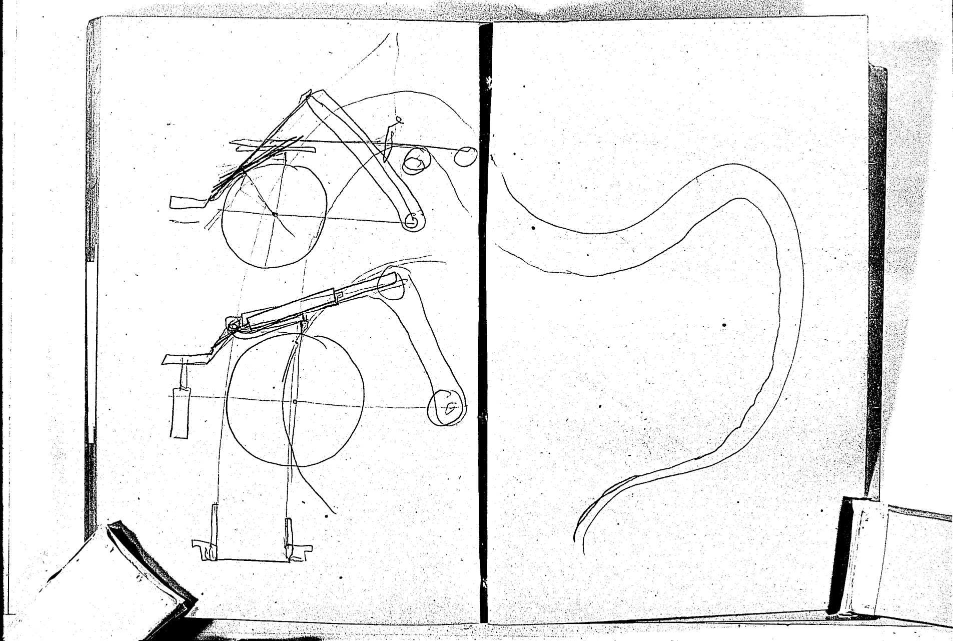


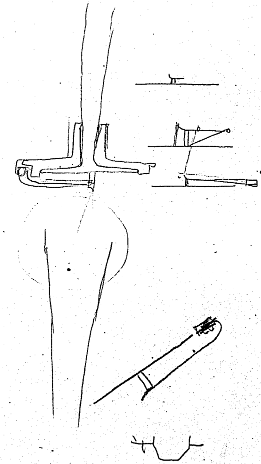
3 ohms 1 Volt.
3 cells 1 Volt. $\frac{1}{2}$ amp
2 amp
3
6 —
12.

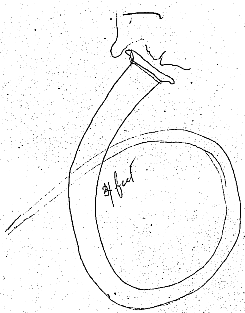
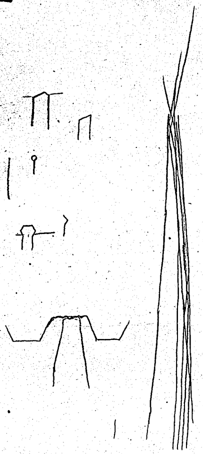
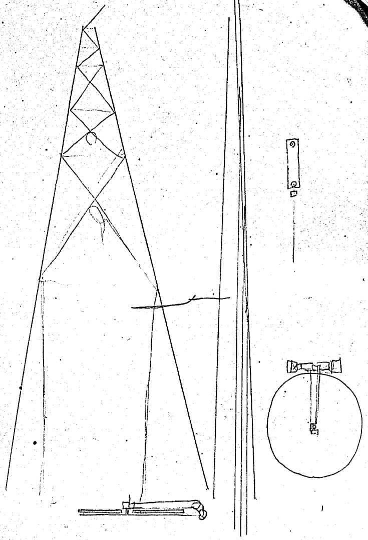
1 3 1.5
2 .75
4 .37
8.
16 – .185
18 Cells
9. Volt.
4

.12


908
108






3+ feet